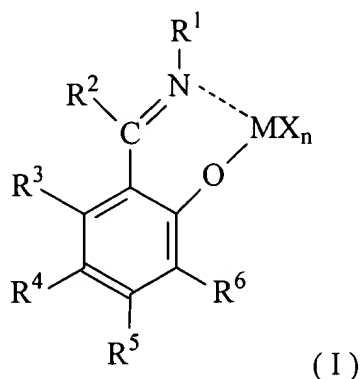


**AMENDMENTS TO THE CLAIMS**

1. (Previously Presented) An olefin polymerization catalyst comprising:  
a transition metal compound; and  
at least one compound selected from the group consisting of an organometallic compound, an organoaluminum oxy-compound and a compound which reacts with said transition metal compound to form an ion pair,  
wherein said transition metal compound has the following formula (I):



wherein M is a transition metal atom selected from the group consisting of Groups 3-7 and 11 of the periodic table,

R<sup>1</sup> to R<sup>6</sup> are the same or different, and are each a hydrogen atom, a halogen atom, a hydrocarbon group, a heterocyclic compound residue, an oxygen-containing group, a nitrogen-containing group, a boron-containing group, a sulfur-containing group, a phosphorus-containing group, a silicon-containing

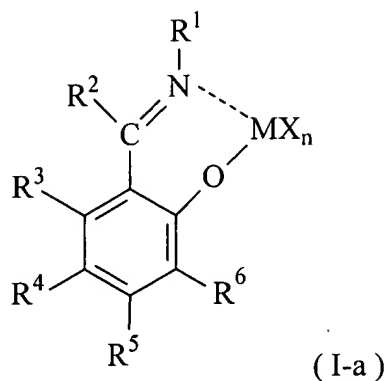
group, a germanium-containing group or a tin-containing group, and two or more of them may be bonded to each other to form a ring,

n is a number making (I) electrically neutral, and

X is a hydrogen atom, a halogen atom, a hydrocarbon group, an oxygen-containing group, a sulfur-containing group, a nitrogen-containing group, a boron-containing group, an aluminum-containing group, a phosphorus-containing group, a halogen-containing group, a heterocyclic compound residue, a silicon-containing group, a germanium-containing group or a tin-containing group, and when n is 2 or greater, plural groups X are the same or different.

2. (Original) The olefin polymerization catalyst as claimed in claim 1, wherein  $R^6$  in the formula (I) is a halogen atom, a hydrocarbon group, a heterocyclic compound residue, an oxygen-containing group, a nitrogen-containing group, a boron-containing group, a sulfur-containing group, a phosphorus-containing group, a silicon-containing group, a germanium-containing group or a tin-containing group.

3. (Previously Presented) The olefin polymerization catalyst as claimed in claim 1, wherein the transition metal compound represented by the formula (I) is a transition metal compound represented by the following formula (I-a):



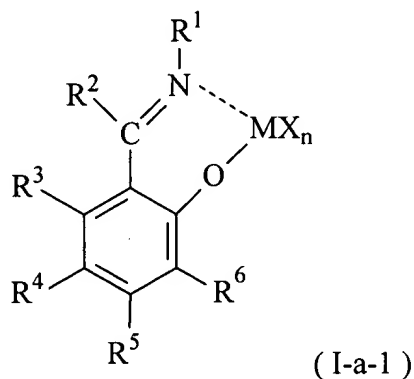
wherein M is a transition metal atom selected from the group consisting of Groups 3-7 and 11 of the periodic table,

$R^1$  to  $R^6$  are the same or different, and are each a hydrogen atom, a halogen atom, a hydrocarbon group, a heterocyclic compound residue, a hydrocarbon-substituted silyl group, a hydrocarbon-substituted siloxy group, an alkoxy group, an alkylthio group, an aryloxy group, an arylthio group, an acyl group, an ester group, a thioester group, an amido group, an imido group, an amino group, an imino group, a sulfonester group, a sulfonamido group, a cyano group, a nitro group, a carboxyl group, a sulfo group, a mercapto group or a hydroxyl group, and two or more of them may be bonded to each other to form a ring, and n is a number making (I-a) electrically neutral.

4. (Original) The olefin polymerization catalyst as claimed in claim 3, wherein  $R^6$  in the formula (I-a) is a halogen atom, a hydrocarbon group, a heterocyclic compound residue, a hydrocarbon-substituted silyl group, a

hydrocarbon-substituted siloxy group, an alkoxy group, an alkylthio group, an aryloxy group, an arylthio group, an acyl group, an ester group, a thioester group, an amido group, an imido group, an amino group, an imino group, a sulfonester group, a sulfonamido group, a cyano group, a nitro group, a carboxyl group, a sulfo group, a mercapto group or a hydroxyl group.

5. (Previously Presented) The olefin polymerization catalyst as claimed in claim 1, wherein the transition metal compound represented by the formula (I) is a transition metal compound represented by the following formula (I-a-1):



wherein M is a transition metal atom selected from the group consisting of Groups 3-7 and 11 of the periodic table,

$R^1$  to  $R^6$  are be the same or different, and are each a hydrogen atom, a halogen atom, a hydrocarbon group, a heterocyclic compound residue, a hydrocarbon-substituted silyl group, a hydrocarbon-substituted siloxy group, an alkoxy group, an alkylthio group, an aryloxy group, an arylthio group, an acyl group, an ester group, a thioester group, an amido group, an imido group, an

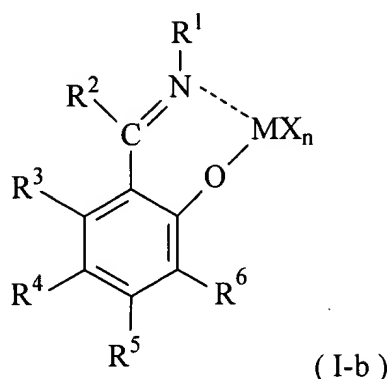
amino group, an imino group, a sulfonester group, a sulfonamido group, a cyano group, a nitro group or a hydroxyl group, and two or more of them may be bonded to each other to form a ring,

n is a number making (I-a-1) electrically neutral, and

X is a hydrogen atom, a halogen atom, a hydrocarbon group of 1 to 20 carbon atoms, a halogenated hydrocarbon group of 1 to 20 carbon atoms, an oxygen-containing group, a sulfur-containing group or a silicon-containing group, and when n is 2 or greater, plural groups X are the same or different.

6. (Original) The olefin polymerization catalyst as claimed in claim 5, wherein R<sup>6</sup> in the formula (I-a-1) is a halogen atom, a hydrocarbon group, a heterocyclic compound residue, a hydrocarbon-substituted silyl group, a hydrocarbon-substituted siloxy group, an alkoxy group, an alkylthio group, an aryloxy group, an arylthio group, an acyl group, an ester group, a thioester group, an amido group, an imido group, an amino group, an imino group, a sulfonester group, a sulfonamido group, a cyano group, a nitro group or a hydroxyl group.

7. (Previously Presented) The olefin polymerization catalyst as claimed in claim 1, wherein the transition metal compound represented by the formula (I) is a transition metal compound represented by the following formula (I-b):



wherein M is a transition metal atom selected from the group consisting of Groups 3-7 and 11 of the periodic table,

$R^1$  to  $R^6$  are the same or different, and are each a hydrogen atom, a halogen atom, a hydrocarbon group, a hydrocarbon-substituted silyl group, an alkoxy group, an aryloxy group, an ester group, an amido group, an amino group, a sulfonamido group, a cyano group or a nitro group, and two or more of them may be bonded to each other to form a ring.

8. (Previously Presented) The olefin polymerization catalyst as claimed in claim 7, wherein  $R^6$  in the formula (I-b) is a halogen atom, a hydrocarbon group, a hydrocarbon-substituted silyl group, an alkoxy group, an aryloxy group, an ester group, an amido group, an amino group, a sulfonamido group, a cyano group or a nitro group.

9. (Previously Presented) The olefin polymerization catalyst as claimed in claim 1, wherein M in the transition metal compound is a transition metal atom selected from Group 3 of the periodic table.

10. (Previously Presented) The olefin polymerization catalyst as claimed in claim 1, wherein M in the transition metal compound is a transition metal atom selected from Group 4 of the periodic table.

11. (Previously Presented) The olefin polymerization catalyst as claimed in claim 1, wherein M in the transition metal compound is a transition metal atom selected from Group 5 of the periodic table.

12. (Previously Presented) The olefin polymerization catalyst as claimed in claim 1, wherein M in the transition metal compound is a transition metal atom selected from Group 6 of the periodic table.

13. (Previously Presented) The olefin polymerization catalyst as claimed in claim 1, wherein M in the transition metal compound is a transition metal atom selected from Group 7 of the periodic table.

14. (Previously Presented) The olefin polymerization catalyst as claimed in claim 1, wherein M in the transition metal compound is a transition metal atom selected from Group 11 of the periodic table.

15. (Withdrawn, Currently Amended) A method for polymerizing olefin,  
which comprises:  
polymerizing a monomer with the olefin polymerization catalyst as  
claimed in any one of claims 1 to 14.  
~~using the olefin polymerization catalyst as claimed in any one of claims 1 to~~  
~~14.~~